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[Title of the Invention] INFORMATION PROCESSING METHOD

[What Is Claimed Is:]

[Claim 1] An information processing method of  
5 distributing across a network a control program for  
controlling a network device, characterized by  
comprising:

a designation step of designating a range for  
searching for a network device connected to the  
10 network;

a search step of searching for the network device  
within the designated range; and

a distribution step of collectively distributing  
a control program to a client which manages the network  
15 device within the range searched in the search step.

[Detailed Description of the Invention]

[0001]

[Technical Field to Which the Invention  
Belongs]

20 The present invention relates to a technique for  
collectively providing the latest version of a printer  
driver for client computers on a network and updating  
the driver.

[0002]

25 [Prior Art]

One conventional printer driver installation  
method is to input predetermined items in an

interactive manner in accordance with the OS of each client computer for controlling a printer. When "Windows (registered trademark)" of Microsoft is used by this method, for example, a user selects "add  
5 printer" from "properties" of a printer and inputs necessary information by an interactive program called wizard, thereby installing a printer driver.

[0003]

Another method installs a printer driver by  
10 user's operation using an installer in the same manner as addition of an application. Also, when printing is to be performed by controlling a specific client apparatus (Point & Print), a printer driver can be installed in the client apparatus from a print server  
15 by distribution by using, e.g., Windows (registered trademark) NT/2000.

[0004]

In the conventional techniques as described above, the printer driver installation operation must  
20 be performed for each individual client apparatus. If, for example, printing is to be executed by printers by controlling various client apparatuses across a network in a company having a large number of computers, printer drivers must be installed in all the client  
25 apparatuses. The total number of manual steps of the operation cannot be ignored. Furthermore, to normally install a printer driver in each client apparatus, a

certain procedure must be reliably followed.  
Therefore, the operator must have knowledge and  
capability to some extent or more.

[0005]

5           This requires preparations relevant to  
installation, e.g., it is necessary to form a detailed  
manual for executing installation, and educate all the  
clients. In addition, if installation cannot be  
normally performed, a network manager must install a  
10 printer driver in each of all the client apparatuses.  
This enormous work interferes with the company  
activities requiring rapid and efficient operations.

[0006]

          Also, in the Point & Print method using a printer  
15 server, printer drivers can be installed in all client  
apparatuses to which automatic printer driver  
distribution is designated. However, since the printer  
drivers are installed in all the client apparatuses by  
automatic distribution, a network manager may become  
20 unable to manage the use of a printer.

[0007]

          As a method of solving these problems, a method  
called "push type printer driver installation" is  
known. In this method, if client apparatuses require  
25 installation or update of printer drivers, this  
installation or update is not performed on the client  
apparatuses. Instead, the method allows a network

manager on the server side to install or update the printer drivers in all the client apparatuses. In this push type printer driver installation, even if a client apparatus is performing a certain operation or printing data, a printer driver can be installed or updated without any interference with these operations. An operator on the client side need not have any knowledge concerning installation, and the network manager need not go to each client apparatus to install the printer driver. That is, the installation operation can be executed by a few operation steps.

[0008]

An example of the above prior art is disclosed in patent reference 1.

15 [0009]

[Patent Reference 1]

Japanese Patent Laid-Open No. 2002-251347

[0010]

[Problems That the Invention Is to Solve]

20 The push type printer driver installation method is advantageous in that client apparatuses can be managed collectively. However, even when this method is used, a network manager must explicitly select client apparatuses in which printer drivers are to be installed. If the number of client apparatuses as objects of installation is large, selecting of these client apparatuses requires a considerable time.

[0011]

The present invention has been proposed to solve the conventional problems, and has as its object to provide a technique by which a network manager does not  
5 individually select client apparatuses as objects of printer driver installation, but limits the range of printers on a network, and collectively installs or updates printer drivers in client apparatuses which manage printers applied to this limited range. As a  
10 consequence, the network manager need not individually recognize the clients, so the operation can be performed by a minimum number of steps.

[0012]

[Means of Solving the Problems]

15 To achieve the above object, according to the present invention, an information processing method by which a control program for controlling a network device is distributed across a network is characterized by comprising:

20 a designation step of designating a range for searching for a network device connected to the network;

a search step of searching for the network device within the designated range; and

25 a distribution step of collectively distributing a control program to a client which manages the network device within the range searched in the search step.

[0013]

[Embodiment]

An embodiment to which the present invention is preferably applied will be described below. Fig. 1 is a block diagram for explaining the arrangement of a system according to the embodiment of the present invention. User PCs 300 and 310 as client apparatuses for controlling printing of printers are connected to a network (Internet) 200, and can exchange various data with an information processing apparatus 100 (to be referred to as an automatic printer driver update server PC (server PC) hereinafter) of a printer maker. Also, the user PCs 300 and 310 are connected to printers 150 and 160, respectively, and can control the printers 150 and 160 on the basis of information distributed from the server PC 100. A file server 210 is connected to the network 200 and manages access to data stored in a network disk 220.

[0014]

Fig. 2 is a view for explaining an outline of the internal arrangements of a user PC and printer by taking the connection of the user PC 300 and printer 150 as an example. Referring to Fig. 2, the user PC 300 includes a CPU 1 for processing a document containing, e.g., graphics, images, characters, and tables (including spreadsheets and the like) on the basis of a processing program or the like stored in a



program ROM of a ROM 3 or an external memory 11. The CPU 1 comprehensively controls devices connected to a system bus 4. The program ROM of the ROM 3 or the external memory 11 also stores, e.g., an operating system program (to be referred to as an OS hereinafter) which is a control program of the CPU 1. A font ROM of the ROM 3 or the external memory 11 stores, e.g., font data used in the document processing described above. A data ROM of the ROM 3 or the external memory 11 stores various data used when the above-mentioned processing and the like are performed. A RAM 2 functions as, e.g., a main memory and work area of the CPU 1.

[0015]

15           A keyboard I/F 5 controls key inputs from a keyboard 9 and a pointing device (not shown). A display I/F 6 controls the display contents of a display 10. Although not shown, the user PC 300 also includes a scanner I/F for controlling a scanner, a digital camera I/F for controlling a digital camera, a facsimile I/F for controlling a facsimile apparatus, a mouse I/F for controlling a mouse, a speaker I/F for controlling a loudspeaker, a sound source device I/F for controlling a sound source device, and a telephone I/F for controlling a communication device such as a telephone.

[0016]

An external memory I/F 7 controls access to the external memory 11 such as a hard disk (HD) or floppy (registered trademark) disk (FD) which stores a boot program, various applications, font data, user files, edit files, printer drivers, and the like. A printer I/F 8 connects the user PC 300 and printer 150 via a predetermined bidirectional interface (interface) 21, and controls communication with the printer 150.

[0017]

Note that the CPU 1 makes WYSIWYG on the display 10 possible by rasterizing an outline font in a display information RAM on the RAM 2. Also, on the basis of commands designated by a mouse cursor or the like (not shown) on the display 10, the CPU 1 opens various registered windows and executes various data processing. To execute printing, a user opens a window concerning settings of printing, sets a printer, and sets a printing method, including selection of a printing mode, with respect to a printer driver.

[0018]

In the printer 150, a printer CPU 12 outputs an image signal as output information to a printing unit (printer engine) 19 via a printing unit I/F 17 connected to a system bus 15, on the basis of a control program or the like stored in a program ROM of a ROM 14 or a control program or the like stored in an external memory 21. The program ROM of the ROM 14 stores, e.g.,

the control program of the CPU 12. A font ROM of the ROM 14 stores, e.g., font data used to generate the output information. A data ROM of the ROM 14 stores, e.g., information used on the user PC if this printer  
5 does not have the external memory 21 such as a hard disk.

[0019]

The CPU 12 can communicate with the user PC 300 via an input unit 16, and can notify the user PC 300 of  
10 internal information of the printer and the like. A RAM 13 functions as, e.g., a main memory and work area of the CPU 12. The memory capacity of the RAM 13 can be expanded by an optional RAM connected to an expansion port (not shown). The RAM 13 is used as,  
15 e.g., an output information rasterizing area, environmental data storage area, and NVRAM. An external memory I/F 18 controls access to the external memory 21 such as a hard disk (HD) or IC card. The external memory 21 is connected as an optional device  
20 and stores font data, an emulation program, form data, and the like. An operation panel 20 has switches, LED display devices, and the like for operations.

[0020]

The number of external memories is not limited to  
25 one but at least one. That is, it is also possible to connect an optional font card in addition to the built-in font, and connect a plurality of external

memories storing programs for interpreting printer control languages of different language systems. Furthermore, an NVRAM (not shown) may also be used to store printer mode setting information from the operation panel 20.

[0021]

Fig. 3 is a view for explaining the arrangement of the server PC 100 shown in Fig. 1. The server PC 100 includes a CPU 301 for executing a network device search program (to be referred to as a "network management program" hereinafter) stored in a ROM 302 or hard disk (HD) 311. The CPU 301 comprehensively controls devices connected to a system bus 304. A RAM 303 functions as, e.g., a main memory and work area of the CPU 301. A keyboard controller (KBC) 305 controls input designations from a keyboard (KB) 309, pointing device (not shown), and the like. A user can set the attribute (e.g., a laser beam printer or bubble jet (registered trademark) printer) of a device to be searched for on the network, and the range of search on the network, via an input means such as the keyboard (KB) 309. A CRT controller (CRTC) 306 controls the display contents of a CRT display (CRT) 310. For example, if network devices of interest are found within the set range, a network device list as the search result is displayed on the CRT. A disk controller (DKC) 307 controls access to a hard disk

(HD) which stores a boot program, application programs, a network management program, and the like. A network interface card (NIC) 308 bidirectionally exchanges data with an agent or network device via the network 200.

5 [0022]

Fig. 5 is a view showing the module configuration of the network management software executed by the CPU 301. To execute this software, the CPU 301 uses the RAM 303 as a work area. Referring to Fig. 5, a device  
10 list module 501 displays a list of devices connected to the network 200 on the CRT 310. By this displayed list, a user can check the presence/absence of a network device of interest within a designated network range.

15 [0023]

A search module 502 searches for a device connected to the network. For example, the search module 502 can search for a printer by using a printer MIB (Management Information Base) which can be managed  
20 by an SNMP (Simple Network Management Protocol), a printer corresponding to Jini (Java (registered trademark) Information Infrastructure), or a printer corresponding to UPnP (Universal Plug and Play). A list of devices found by the search module 502 is  
25 displayed by the device list module 501.

[0024]

A conversion module 503 converts network address

information of a device found by the search module 502 into an address in a form designated by a user, e.g., a domain unit by a DNS (Domain Name System), an OU (Organization Unit) in directory services such as Active Directory, NDS (Novell Directory Service), or an LDAP (Lightweight Directory Access Protocol), or an IP address unit.

[0025]

Next, the process of downloading a printer driver from the server PC 100 into a predetermined user PC across the network 200, or updating a printer driver will be described below with reference to a flow chart shown in Fig. 4.

[0026]

#### 15 <Printer Driver Update Process>

Fig. 4 is a flow chart for explaining the printer driver installation or update process according to the embodiment of the present invention. First, in step S401, the manager of the server PC 100 designates a range on the network as a search range, in order to search for printers as objects of printer driver update. The unit of the "range" designated to search for printers connected to the network largely depends upon the scale of printer management. Examples are a domain unit by a DNS (Domain Name System), an OU (Organization Unit) in directory services such as Active Directory, NDS (Novell Directory Service), or an

LDAP (Lightweight Directory Access Protocol), or an IP address unit. The server manager need only designate any of these arbitrary units as the range of printers to be updated; he or she need not know details such as  
5 the name and address of each printer on the network.  
[0027]

Fig. 6 is a view for conceptually explaining the search range of network devices connected to the network. User PCs 300, 310, and 320 are connected to a  
10 network 200 and included in regions A, B, and C, respectively, on the network. Printers 150, 160, and 170 are connected to the user PCs 300, 310, and 320, respectively. A user PC 330 included in a region D is connected to the user PC 310, and a printer 180 is  
15 connected to the user PC 330. By designating the "range" described above, it is possible to set each of the regions A, B, and C as a printer search range, a region E made up of the regions A and C as a search range, or the regions B and C as a search range.

20 [0028]

Printers are then searched for within the range designated in step S402. As a search method, it is possible to search for a printer by using a printer MIB (Management Information Base) which can be managed by  
25 an SNMP (Simple Network Management Protocol), a printer corresponding to Jini (Java (registered trademark) Information Infrastructure), or a printer corresponding

to UPnP (Universal Plug and Play). It is of course also possible to search for devices connected to the network by using some other technique. That is, the gist of the present invention is not limited to the  
5   aforementioned means, provided that network devices, i.e., user PCs and printers in this embodiment, can be detected in a region designated as a search range on the network.

[0029]

10           For example, an SNMP network management technique as one printer searching means is as follows. A search module (702 in Fig. 7) containing a network management protocol used to exchange management information executes communication between at least one network  
15   management station (NMS: corresponding to the server PC 100 shown in Fig. 1) and a plurality of nodes to be managed (e.g., 300, 310, 150, and 160 shown in Fig. 1) including an agent. A user can acquire information pertaining to the attribute (e.g., a PC, printer, or  
20   facsimile apparatus) of a device on the network, and network information (e.g., an IP address, MAC address, or subnet address) of the device, by communicating with agent software on a node to be managed by using the network management software on the NMS (server PC 100).

25   [0030]

          The "agent" is software running as a background process for each device to be managed connected to the



network. This agent holds data concerning its own state in the form of a database (MIB). Each of the user PCs 300 and 310 and printers 150 and 160 has this agent on a network board for connecting to the network, so these user PCs (300 and 310) and printers (150 and 160) can be managed by the network management software. The server PC 100 can request the MIB to transmit information to be collected from an object to be managed, and receive the corresponding data from each device.

[0031]

Information of a printer or the like need not be acquired by the above-mentioned method. For example, a device attribute information list and network information list registered in the database of the server PC 100 can also be acquired in accordance with the range designated in step S401. Also, the server PC 100 need only acquire these information lists registered in the network disk 220 connected to the network, in accordance with the designated range.

[0032]

In step S403, on the basis of the printer search process in step S402, a network address is converted into the form by which the range is designated on the network in step S401. For example, if the range on the network is designated for each domain, the server PC 100 communicates with a DNS server (not shown) and can

acquire the domain name of the corresponding printer or user PC on the basis of the network information (IP address) of the found printer.

[0033]

- 5           If the range on the network is designated for each IP address, the network address of each found device can be acquired from, e.g., the MAC address or subnet address information of the device.

[0034]

- 10           In step S404, whether printers exist in the range designated in step S401 is determined. If corresponding printers exist in the range designated by the server manager (YES in S404), a printer driver is distributed to and installed in each of user PCs (300  
15   and 310) managing these printers, or an installed printer manager is updated (S405). If there is no corresponding printer within the designated range (NO in S404), the processing is terminated without any update process.

20   [0035]

- In step S405, as an automatic printer driver update process, a printer driver installation execute file is executed to install or update a printer driver in each of the user PCs controlling the printers within  
25   the range designated in step S401. This printer driver installation or update is explained by the technique called push type printer driver installation, so a

detailed explanation thereof will be omitted.

[0036]

Fig. 7 is a view showing a memory map when the printer driver program is loaded into the RAM 2 on each of the user PCs 300 and 310 and made executable in this embodiment. This memory map contains various application programs 201 executed on the user PC 300, a free memory area 202, related data 203, printing related programs 204, an OS 205, and a basic I/O system (BIOS) 206 for controlling various devices, e.g., the printer 150, connected to the user PC 300. The printer driver program to be installed is stored in the memory as part of the printing related programs 204.

[0037]

In this embodiment as described above, in the printer driver installation or update process, each of a large number of existing client computers need not be recognized. That is, only by designating the network range of printers as objects of installation or update, the network addresses of printers and the like within this range can be acquired. On the basis of this address information, printer drivers can be collectively installed or updated in these printers. This processing reduces the load required to individually install or update the printer drivers.

[0038]

Fig. 8 is a view showing a modification of the

installation process shown in Fig. 4.

In S801, the network range of printer drivers as objects of printer driver update is designated. In response to this search designation in S801, a search request is transmitted to the user PC 300.

[0039]

In S8001, the user PC 300 receives and recognizes the search request transmitted from the server PC 100. In S8002, the user PC 300 returns a search response to the search request.

[0040]

Returning to the processing on the server PC 100, in S802, the server PC 100 sequentially receives and stores search requests from responding printers.

[0041]

In step S803, on the basis of the results of printer search in step S802, the network address is converted into the form by which the range is designated on the network in step S801. For example, if the range on the network is designated for each domain, the server PC 100 communicates with a DNS server (not shown). On the basis of the network information (IP address) of the found printer, the server PC 100 can acquire the domain name of the corresponding printer or user PC.

[0042]

If the range on the network is designated in

units of IP addresses, the network address of the found device can be acquired from, e.g., the MAC address or subnet address information of the device.

[0043]

5           In step S804, whether printers exist in the range designated in step 401 is determined. If corresponding printers exist in the range designated by the server manager (YES in S804), a printer driver is distributed to and installed in a driver accepting module activated  
10 in each of user PCs (300 and 310) managing these printers (S805). A printer driver already installed in the user PC 300 is updated (as will be described in detail later). If it is determined in S804 that there is no corresponding printer within the designated range  
15 (NO in S804), the processing is terminated without any update process.

[0044]

          In step S806, the server PC 100 waits for reception of an installation completion notification  
20 from the user PC 300. That is, the server PC 100 determines in S806 whether installation completion notifications are received from all the PCs found in S802, or whether a predetermined time has elapsed. If installation completion notifications are received from  
25 all the user PCs or if the predetermined time has elapsed, the server PC 100 determines that the installation process is normally completed, and

terminates the process. If installation completion notifications are not received from all the user PCs and if the predetermined time has not elapsed, the flow returns to S805 to continue the process.

5 [0045]

The processing on the user PC 300 will be explained below. In S8001, the user PC 300 receives and recognizes the search request transmitted from the server PC 100. In S8002, the user PC 300 responds to  
10 the search request in S8001. In S8003, by interlocking with the response to the search request in S8002, the user PC 300 loads the driver accepting module as a resident program, and prepares for driver reception. In S8004, the user PC 300 uses the driver accepting  
15 module to receive the driver transmitted in S805 by the server PC. In S8005, the user PC 300 installs the driver received in S8004. When this driver installation process is completed, the flow advances to S8006 to unload the driver accepting module. In S8007,  
20 if all the received drivers are completely installed or updated, the user PC 300 transmits an installation completion notification to the server, and terminates the processing.

[0046]

25 It is of course also possible to perform S8003 in response to the recognition process in S8001. More preferably, in S8003, a preparation completion

notification indicating that the accepting module for receiving a control program to be activated in the user PC as a driver transfer destination is prepared is transferred to the server PC. At the beginning of  
5 S8005, the preparation completion notification transmitted in S8003 is recognized. In S805, the driver distribution process is performed in response to the reception and recognition of the preparation completion notification.

10 [0047]

<Other Embodiment>

Although a printer driver is an object in the above embodiment, the present invention can also be practiced for various device drivers, e.g., drivers of  
15 a display, scanner, digital camera, facsimile apparatus, mouse, loudspeaker, and sound source device.  
[0048]

Further, the object of the present invention can also be achieved by supplying a storage medium storing  
20 the program code of software for implementing the functions of the above embodiment to a system or apparatus, and reading out and executing the program code stored in the storage medium by a computer (or a CPU or MPU) of the system or apparatus. In this case,  
25 the program code read out from the storage medium implements the functions of the above embodiment, and the storage medium storing this program code

constitutes the invention.

[0049]

As this storage medium for supplying the program code, it is possible to use, e.g., a floppy (registered  
5 trademark) disk, hard disk, optical disk, magnetooptical disk, CD-ROM, CD-R, magnetic tape, nonvolatile memory card, and ROM.

[0050]

Also, besides the functions of the above  
10 embodiment is implemented by executing the readout program code by the computer, the present invention includes a case where an OS (Operating System) or the like running on the computer performs part or the whole of actual processing in accordance with designations by  
15 the program code and thereby implements the functions of the embodiment.

[0051]

Furthermore, the present invention also includes a case where the program code read out from the storage  
20 medium is written in a memory of a function expansion board inserted into the computer or of a function expansion unit connected to the computer, and, in accordance with instructions by the program code, a CPU or the like of the function expansion board or function  
25 expansion unit performs part or the whole of actual processing and thereby implements the functions of the above embodiment.



[0052]

<Modes>

Modes according to the present invention will be enumerated below.

5 [0053]

[Mode 1] An information processing method of distributing across a network a control program for controlling a network device is characterized by comprising:

10 a designation step of designating a range for searching for a network device connected to the network;

a search step of searching for the network device within the designated range; and

15 a distribution step of collectively distributing a control program to a client which manages the network device within the range searched in the search step.

[0054]

[Mode 2] The information processing method  
20 according to mode 1 is characterized by further comprising an acquisition step of acquiring address information of the network device on the basis of data obtained by the result of search of the network device in the search step,

25 wherein the distribution step performs the distribution process by using the address information acquired in the acquisition step.

[0055]

[Mode 3] The information processing method according to mode 1 is characterized by further comprising a recognition step of recognizing a  
5 preparation completion notification indicating that an accepting module which receives the control program activated in an external information processing apparatus as a transfer destination of the control program is prepared,

10 wherein the distribution step distributes the control program in response to recognition of the preparation completion notification by the recognizing means.

[0056]

15 [Mode 4] The information processing method according to mode 2 is characterized in that the acquisition step acquires network address information corresponding to a unit for designating the search range, on the basis of data obtained by the result of  
20 search of the network device.

[0057]

[Mode 5] The information processing method according to mode 1 is characterized in that the range designated to search for the network device is  
25 designated for each domain, each OU in a directory service, or each IP address.

[0058]

[Mode 6] An information processing apparatus for distributing across a network a control program for controlling a network device is characterized by comprising:

5           designating means for designating a range for searching for a network device connected to the network;

          searching means for searching for the network device within the designated range; and

10           distributing means for collectively distributing a control program to a client which manages the network device within the range searched by the searching means.

[0059]

15           [Mode 7] A program for allowing a computer to execute information processing for distributing across a network a control program for controlling a network device is characterized by comprising:

          a designation module for designating a range for  
20   searching for a network device connected to the network;

          a search module for searching for the network device within the designated range; and

          a distribution module for collectively  
25   distributing a control program to a client which manages the network device within the range searched by the search module.

[0060]

[Mode 8] A computer-readable storage medium is characterized by storing a program defined in mode 7.

[0061]

5 [Effect of the Invention]

As has been described above, according to the present invention, when control programs of network devices are to be installed, each of a number of existing client computers need not be recognized, and  
10 it is only necessary to designate the range of network devices as objects of installation or update. In this manner, the network addresses of the network devices within the range are acquired, and, on the basis of this address information, the control programs can be  
15 collectively installed or updated in clients which manage the network devices. This processing reduces the load required to individually install or update the printer drivers.

[Brief Description of the Drawings]

20 [Fig. 1]

Fig. 1 is a block diagram for explaining the configuration of a system according to an embodiment of the present invention.

[Fig. 2]

25 Fig. 2 is a view for explaining an outline of the internal arrangements of a user PC and printer by taking the connection of a user PC 300 and printer 150

as an example.

[Fig. 3]

Fig. 3 is a view for explaining the arrangement of a server PC 100 shown in Fig. 1.

5 [Fig. 4]

Fig. 4 is a flow chart for explaining the process of installing or updating a printer driver according to the embodiment of the present invention.

[Fig. 5]

10 Fig. 5 is a view showing the module configuration of network management software.

[Fig. 6]

Fig. 6 is a view for conceptually explaining the search range of network devices connected to a network.

15 [Fig. 7]

Fig. 7 is a view showing a memory map when a printer driver program is loaded in a RAM 2 on the user PC 300 and made executable in the embodiment.

[Fig. 8]

20 Fig. 8 is a flow chart showing a modification of the installation process shown in Fig. 4.

[Description of the Reference Numerals]

1	CPU
2	RAM
25 3	ROM
4	system bus
5	keyboard I/F

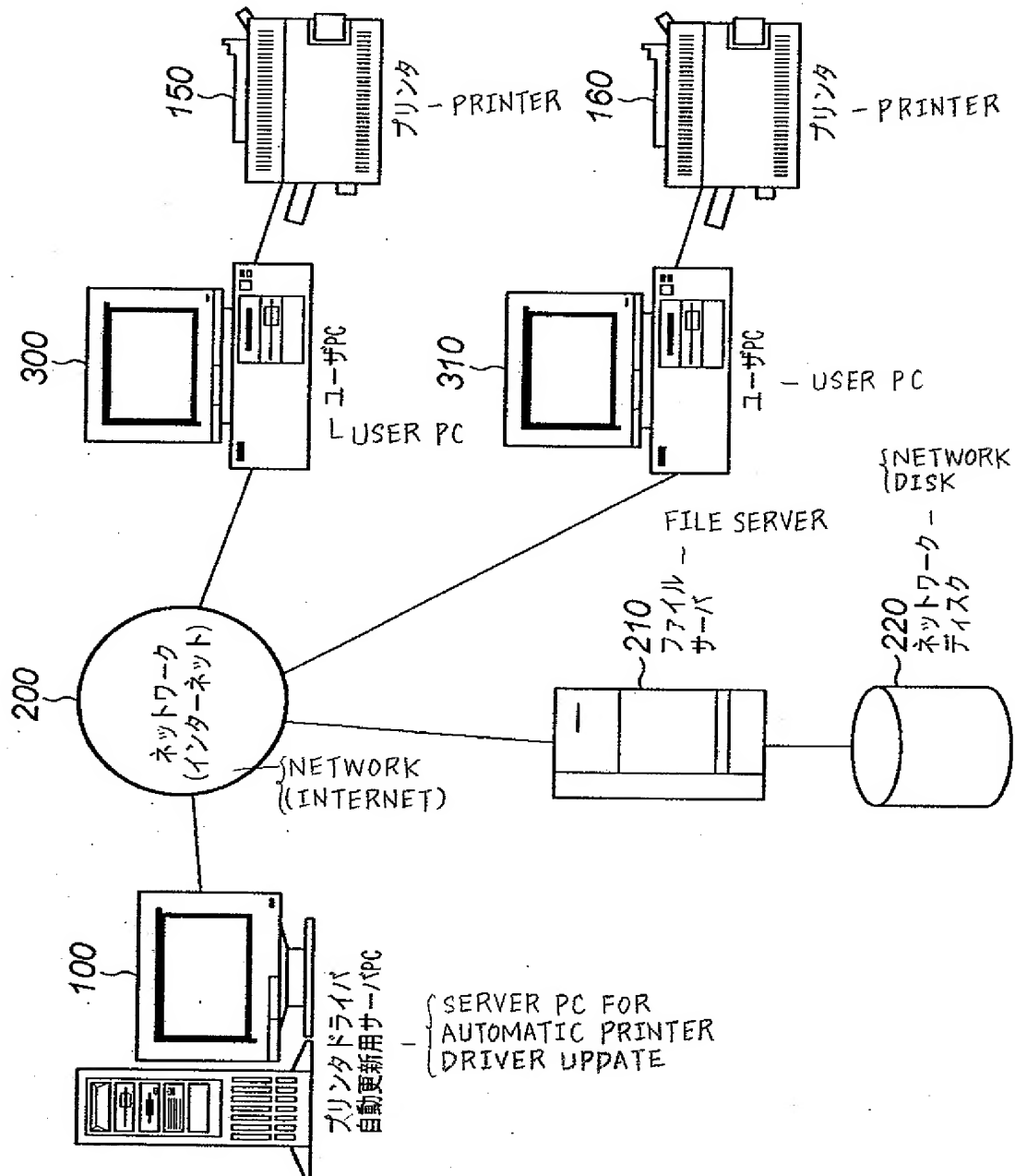
	6	display I/F
	7	external memory I/F
	8	printer I/F
	9	keyboard
5	10	display
	11	external memory (HD, FD)
	12	CPU
	13	RAM
	14	ROM
10	15	system bus
	16	input unit
	17	printing unit I/F
	18	external memory I/F
	19	printing unit
15	20	operation panel
	21	external memory (HD, FD)
	100	printer controller
	150	printer
	200	computer main body
20	300	user PC

【書類名】 図面 - DRAWINGS

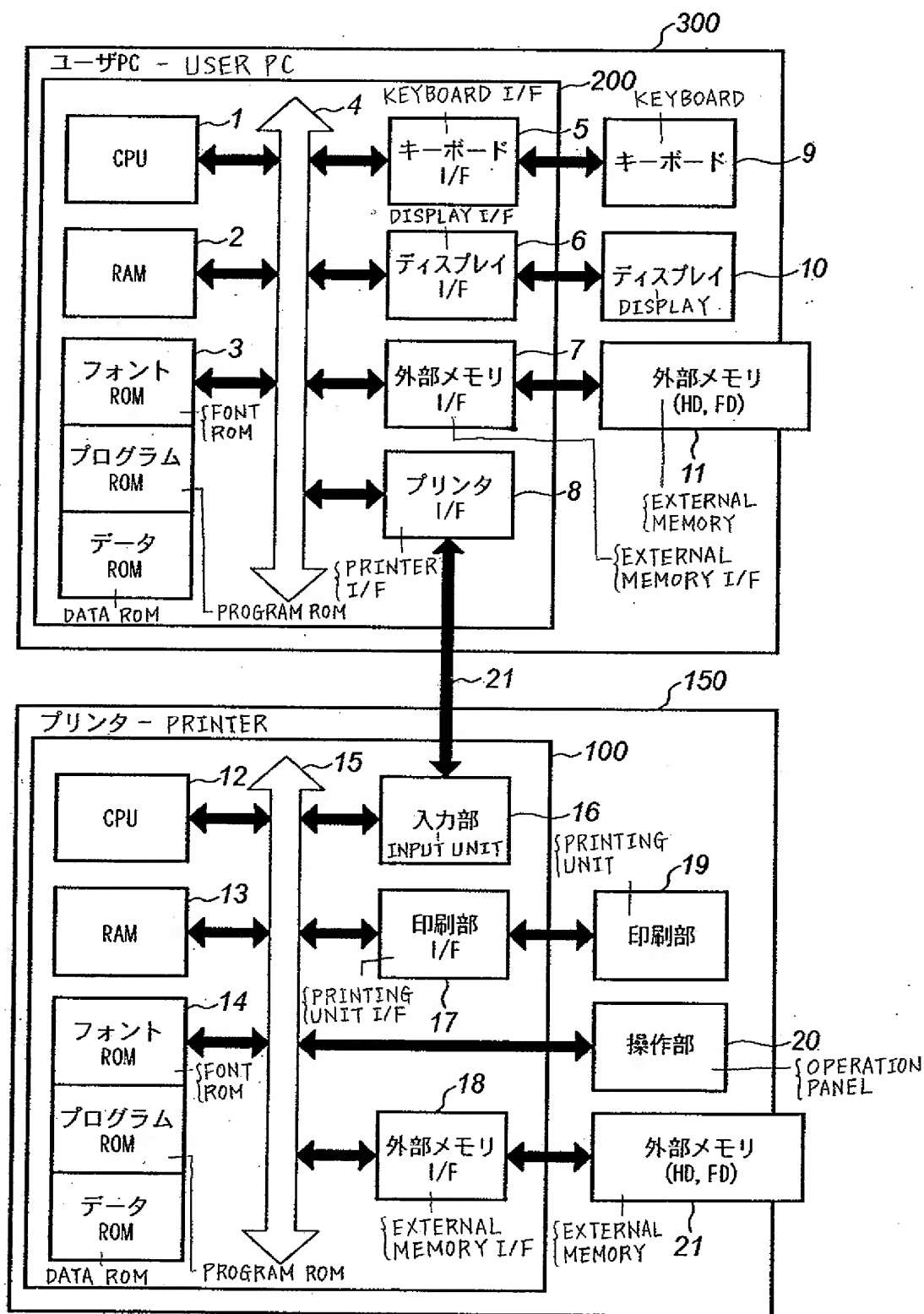
L TYPE OF DOCUMENT

【図1】

L FIG. 1

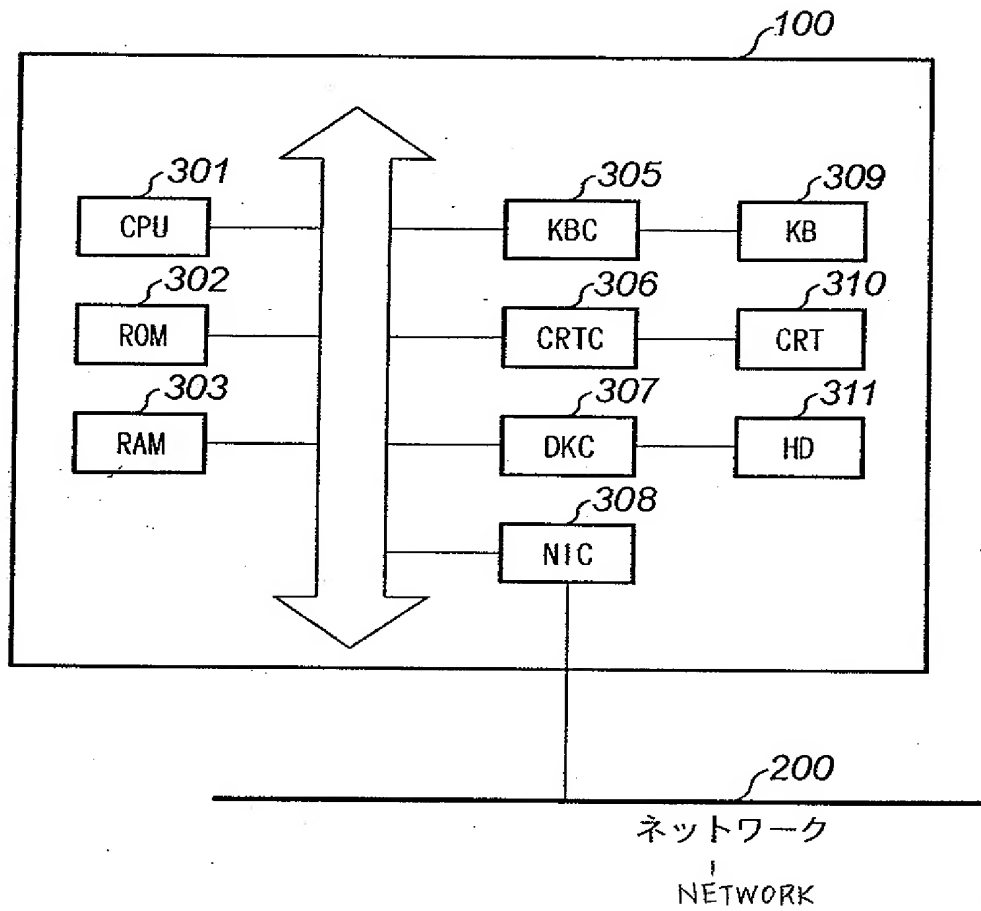


【図2】- FIG. 2

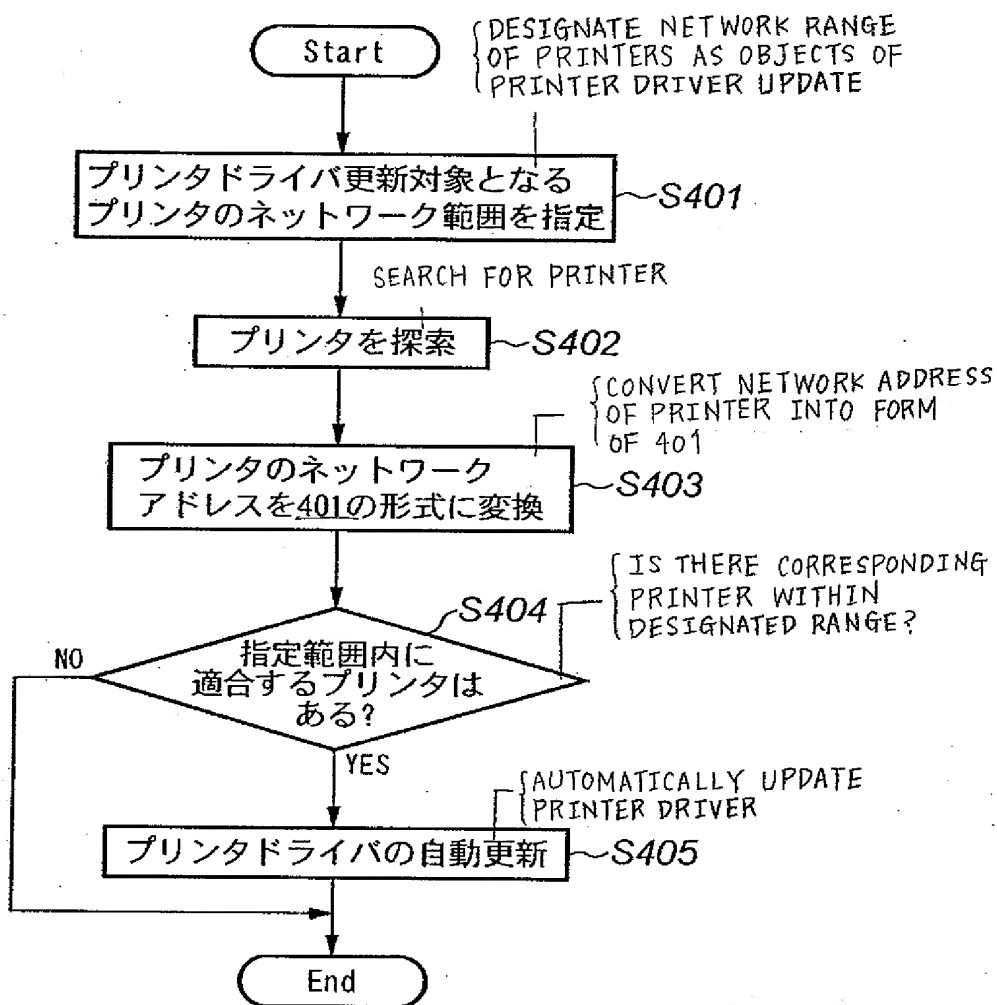




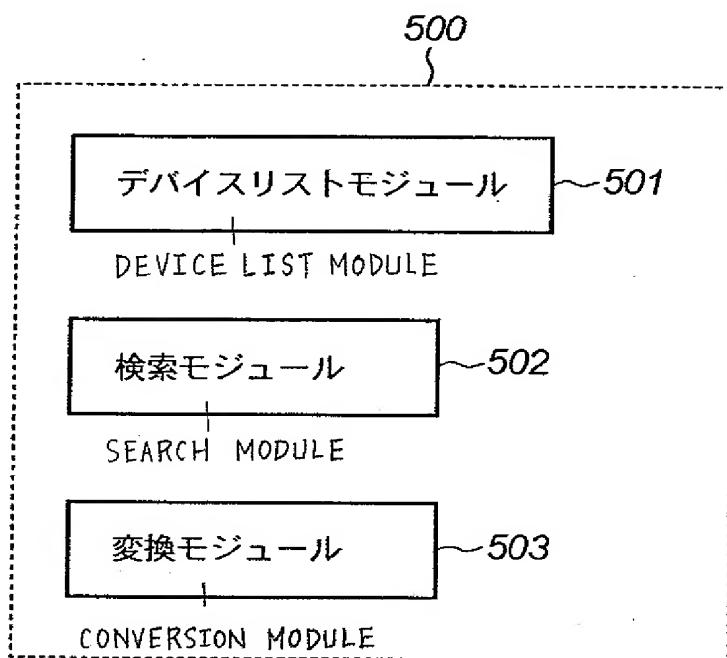
【図3】- FIG. 3



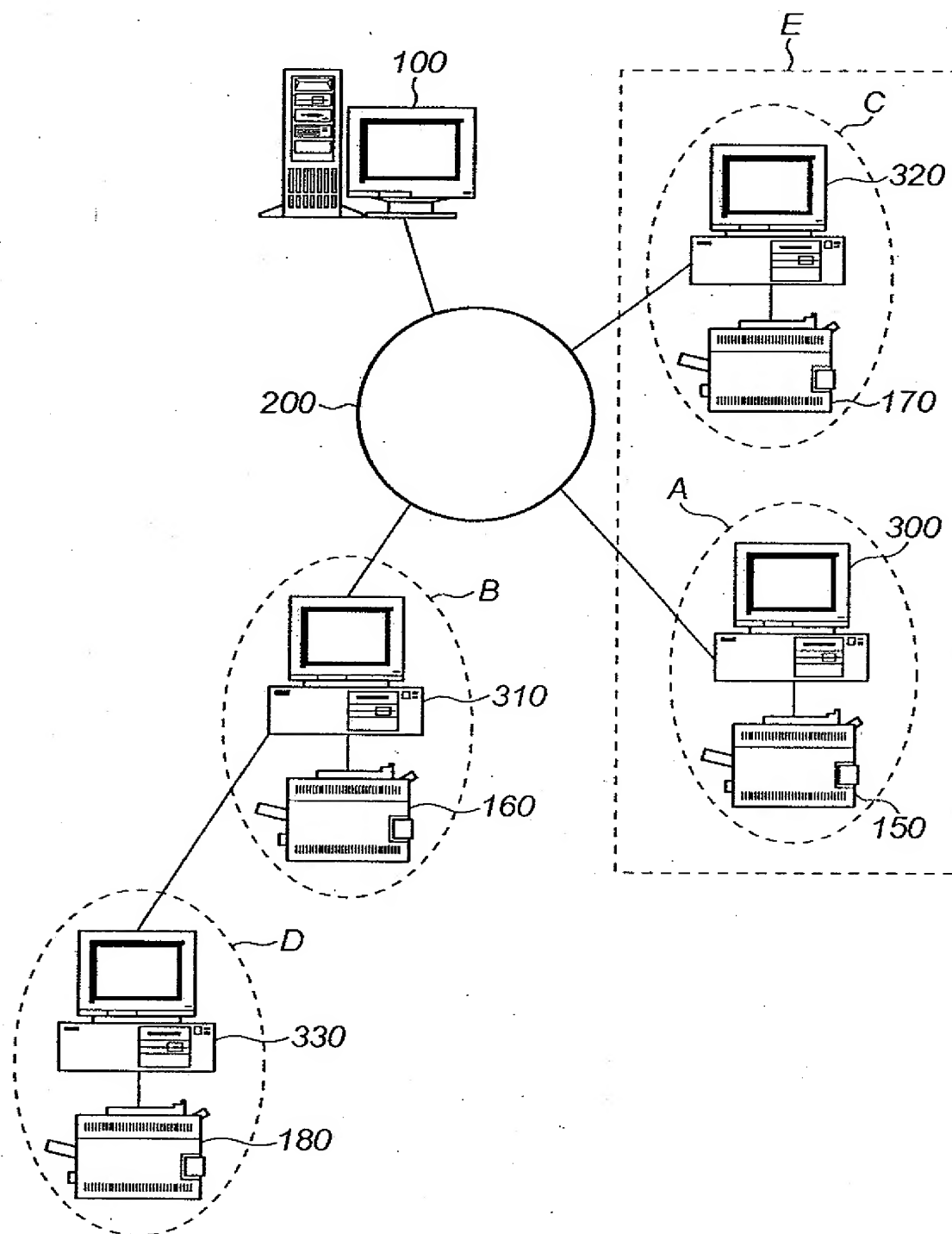
【図4】- FIG. 4



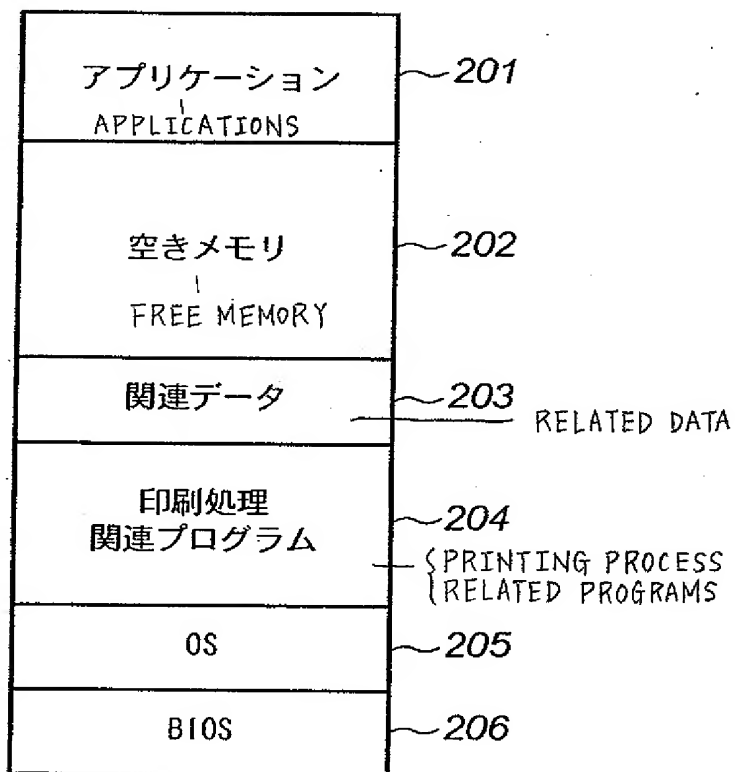
【図5】- FIG. 5



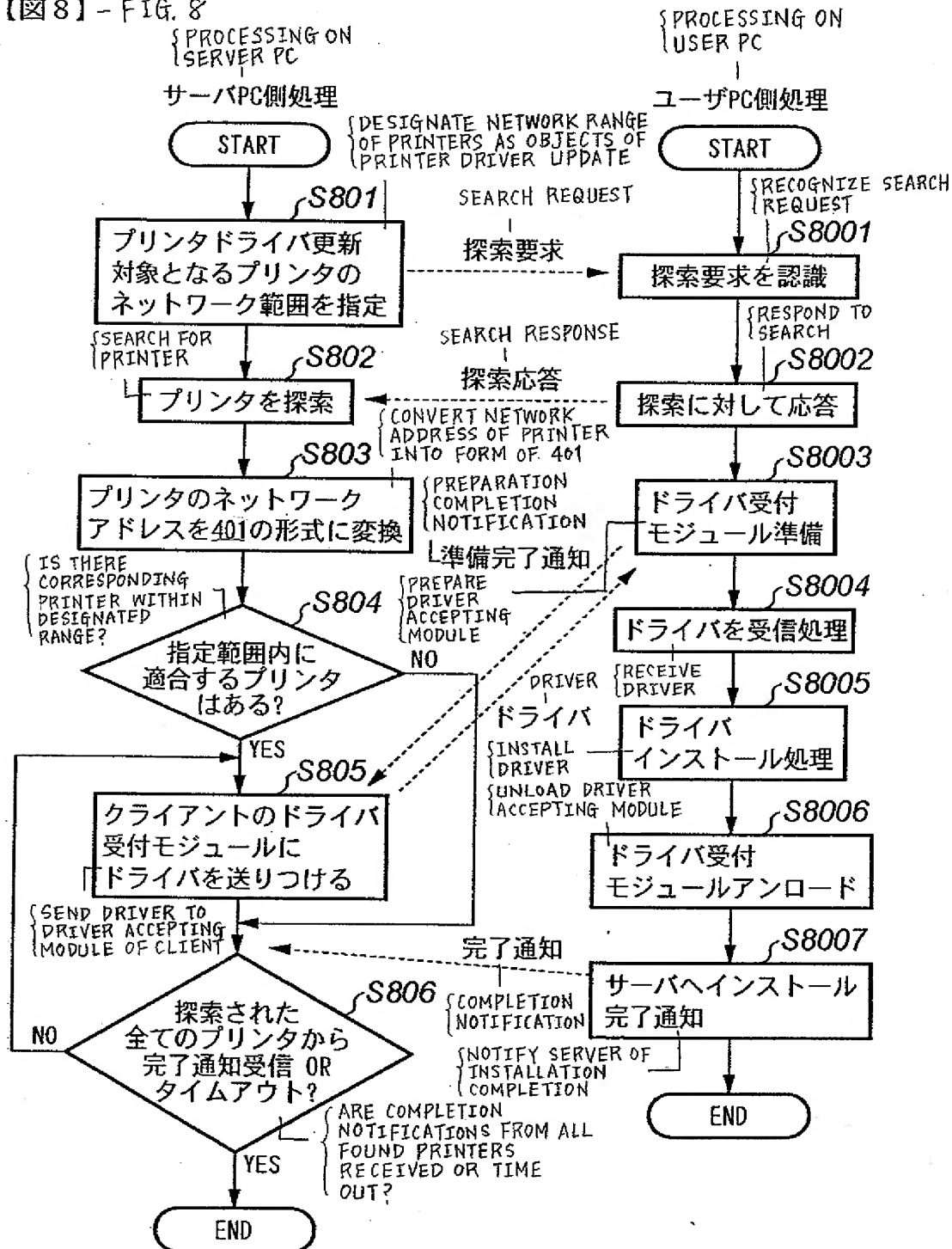
【図6】 Fig. 6



【図7】- FIG. 7



【図8】- FIG. 8



[Type of the Document] Abstract

[Abstract]

[Problem] This invention makes it possible to collectively install control programs in clients as  
5 objects within the designated range on a network.

[Solving Means] A range for searching for network devices connected to a network is designated on the network (S401), and the network devices are searched for within the designated range (S402). Control  
10 programs are collectively distributed to clients for managing the network devices within the search range (S405).

[Selected Drawing] Fig. 4